

## REMARKS

### I. INTRODUCTION

Claims 8, 16 and 17 have been canceled; claims 9 and 11-15 have been amended; and claims 18 and 19 have been added hereby. Therefore, claims 9, 11-15, 18 and 19 are pending in the present application. The amendments to claims 9 and 11-15, and the introduction of new claims 18 and 19, do not add new matter. Entry of the amendments is requested since they raise no new issues and put the claims in condition for allowance and/or in better form for appeal.

### II. THE REJECTION OF CLAIMS 8 and 16 UNDER 35 U.S.C. § 102(b) SHOULD BE WITHDRAWN

Claims 8 and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent No. 405044439 to Fukuda (Fukuda). In response, independent claims 8 and 16 have been canceled, thereby rendering moot the rejection of these claims.

### III. THE REJECTION OF CLAIM 17 UNDER 35 U.S.C. § 102(b) SHOULD BE WITHDRAWN

Claim 17 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,319,930 to Shinzawa et al. (Shinzawa). In response, independent claim 17 has been canceled, thereby rendering moot the rejection of this claim.

### IV. THE REJECTION OF CLAIMS 9 and 13-15 UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN

Claims 9 and 13-15 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fukuda (JP 405044439) in view of U.S. Patent No. 5,097,665 to Kammel (Kammel).

Claims 9 and 13-15 have been amended to depend from new claim 18. Neither Fukuda nor Kammel suggests the claimed feature of claim 18, i.e., calculating a loading state of the

filter, the process of calculating including determining a particulate emission rate of the internal combustion engine based on at least: a) one first operating parameter of the internal combustion engine; and b) an oxygen concentration in exhaust gas of the internal combustion engine.

The Office Action asserts that the Fukuda reference discloses simulating a quantity characterizing a state of congestion of the particle filter, by using an oxygen concentration in the exhaust gas. However, it is respectfully submitted that this assertion is not correct, since Fukuda only uses a signal from the oxygen sensor to decide whether a loading state of the particle filter has reached a predefined measure, at which point regeneration must take place. The signal from the oxygen sensor is not used to calculate a loading state, or the level of accumulation, of the particle filter.

In particular, in Fukuda, a signal from an oxygen sensor is analyzed in two different operating states. In a first operating state, light particle emission of the internal combustion engine is present, so that the particle filter does not collect any, or only a low number of, particles. The oxygen concentration of the exhaust gas is high in the first operating state. In a second operating state, there is a high particle emission of the internal combustion engine, and at the same time, a low oxygen concentration is present. In this second operating state, the particle filter collects a high number of particles.

The two operating states of Fukuda differ in the exhaust-recirculation rate. At a low exhaust-recirculation rate, the objective of reducing NOx in the exhaust gas is achieved only to a limited extent, while the particle emission of the internal combustion engine is very low. At the same time, a higher oxygen concentration is present in the exhaust gas. In contrast, at a high exhaust-recirculation rate, the NOx-proportion in the exhaust gas is reduced to a meaningful

extent, and the oxygen concentration is low. However, the particle emission is substantially increased at the same time. (See Fukuda translation, paragraph 12).

Thus, the signal from the oxygen sensor in Fukuda is used only to decide that the loading state of the particle filter has reached a predefined measure and that regeneration must take place. However, the signal from the oxygen sensor is not utilized to calculate the loading state of the particle filter, in contrast to the Examiner's assertion.

The Kammel reference also fails to disclose or suggest calculating a loading state of the filter using a determination of particulate emission rate that is based (in part) on an oxygen concentration in an exhaust gas. Accordingly, the combination of Fukuda and Kammel fails to disclose or suggest all the features of new claim 18 and its dependent claims 9 and 13-15.

Accordingly, withdrawal of the rejection of claims 9 and 13-15 under 35 U.S.C. § 103(a) is respectfully requested.

**V. THE REJECTION OF CLAIM 11 UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN**

Claim 11 was rejected under 35 U.S.C. § 103(a) as unpatentable over Fukuda.

Claim 11 has been amended to depend from new claim 18. As discussed above, Fukuda does not disclose or suggest each of the features of claim 18. Hence, Fukuda also does not disclose or suggest the features of claim 11, which depends from claim 18.

Accordingly, withdrawal of the rejection of claim 11 under 35 U.S.C. § 103(a) is respectfully requested.

**VI. THE REJECTION OF CLAIM 12 UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN**

Claim 12 was rejected under 35 U.S.C. § 103(a) as unpatentable over Fukuda in view of Shinzawa.

Claim 12 has been amended to depend from new claim 18. Since Shinzawa also does not disclose or suggest calculating of loading of a particulate filter based on oxygen concentration in the exhaust gas, it is submitted that the combination of Fukuda and Shinzawa fails to disclose or suggest the features of claim 12 which depends from claim 18.

Accordingly, withdrawal of the rejection of claim 12 under 35 U.S.C. § 103(a) is respectfully requested.

**VII. NEW DEVICE CLAIM 19**

New claim 19 recites a device for controlling an internal combustion engine having an exhaust treatment system including a particle filter including a processing unit configured to perform processes analogous to the steps recited in new claim 18. It is submitted that new claim 19 is patentable over the references relied upon, for at least the reasons discussed above in connection with claim 18.

**VIII. CONCLUSION**

Applicants respectfully submit that the present invention is new, non-obvious, and useful. Reconsideration and allowance of pending claims 9, 11-15, 18 and 19 are kindly requested.

Respectfully submitted,

KENYON & KENYON

Dated: 2/24, 2004

By: 

Richard L. Mayer  
Reg. No. 22,490

One Broadway  
New York, NY 10004  
(212) 425-7200  
CUSTOMER NO. 26646

*36,197)*